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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,349	01/08/2008	Michael Kamleiter	51648	4931

1609 7590 05/31/2011

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ART UNIT	PAPER NUMBER
1777	

MAIL DATE	DELIVERY MODE
05/31/2011	PAPER

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/582,349
Filing Date: January 08, 2008
Appellant(s): KAMLEITER ET AL.

Mark Bicks
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/22/11 appealing from the Office action mailed 10/28/10.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 10-33 as filed 10/13/2010.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

US 5,034,129	TEN HOVE	07-1991
US 6,454,942	SHINTANI	09-2002
US 2002/0046970	MURASE	04-2002
US 2003/0098275	MAHENDRAN	05-2003
US 5.359,735	STOCKWELL	11-1994

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Objections

Claims 22 and 33 – "polysulfane" appears to be a typo for 'polysulfone'. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 16 and [[~~24~~]] -- 28-- are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the various fibers or filaments, does not reasonably provide enablement for graphite powder. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

[There was an inadvertent typographical error in the final rejection, which is corrected herein. Claim 24 was rejected in error instead of Claim 28]

Applicant's disclosure does not provide any details of how the mono or multi-filaments of graphite powder ~~or activated charcoal~~ is made, and it is not possible to one of ordinary skill to make this without undue experimentation.

The rejection of the "activated charcoal" fiber is hereby withdrawn based on the evidence US 4,740,434 to Hirota, presented with the brief. However, "mono or multi-filaments made of "graphite powder" still raises the question. While graphite fibers are known, the claim, in a Markush group, is reciting fibers *consisting of …graphite powder*. Evidences presented would support fibers coated or impregnated with graphite powder, but that is not what is claimed.

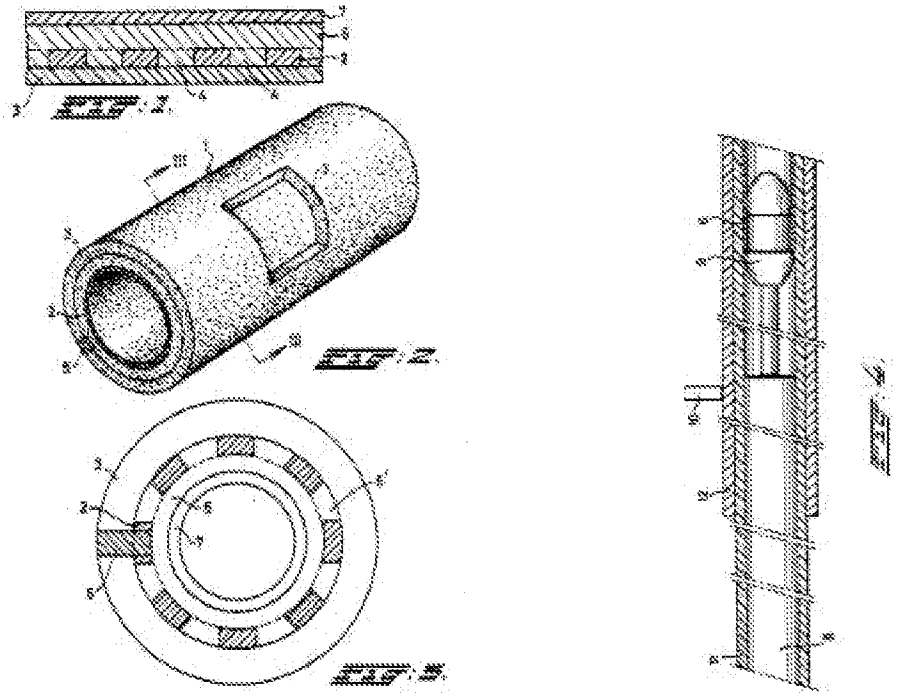
See MPEP 608.01(p), Completeness: "Markush claims must be provided with support in the disclosure for each member of the Markush group. Where the constitution and formula of a chemical compound is stated only as a probability or speculation, the disclosure is not sufficient to support claims identifying the compound by such composition or formula."

Claim Rejections - 35 USC § 102/103

1. **Claims 10-14, 16-26 and 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ten Hove (US 5,034,129) in view of Shintani et al (US 6,454,942, with further evidence from Murase et al (US 2002/0046970 or Mahendran et al (US 2003/0098275)**

Claims 10-13, 17-22, 23-25 and 29-33:

Ten Hove: The detailed structure of the composite membrane (Figs 1-3) and the method of making (fig 4) are reproduced herein.



According to fig 4, the process of making the membrane comprises having a woven or knitted tube (11) over Mandrel 8, and then another non-woven, woven or knitted tube (12) slipped over tube 11. The external tube 12 is welded if it is non-woven,

but the reference teaches woven or knitted tube as alternative to the non-woven for the external tube 12, and that a weld is not necessary if they are in the form of tubes (column 2, lines 11-15). Membrane of the desired thickness is applied on the inside of tube 11. See column 4, lines 10-29. The membrane material is polysulfone, PVdF, etc. (column 1, lines 32-38), and the fabric material is plastic, polyester (column 1, lines 47-58). The reference also describes the actual forming of the membrane on the fabric is known in the art, and is by coating a solution and then passing through a precipitation bath – see column 4, lines 34-68

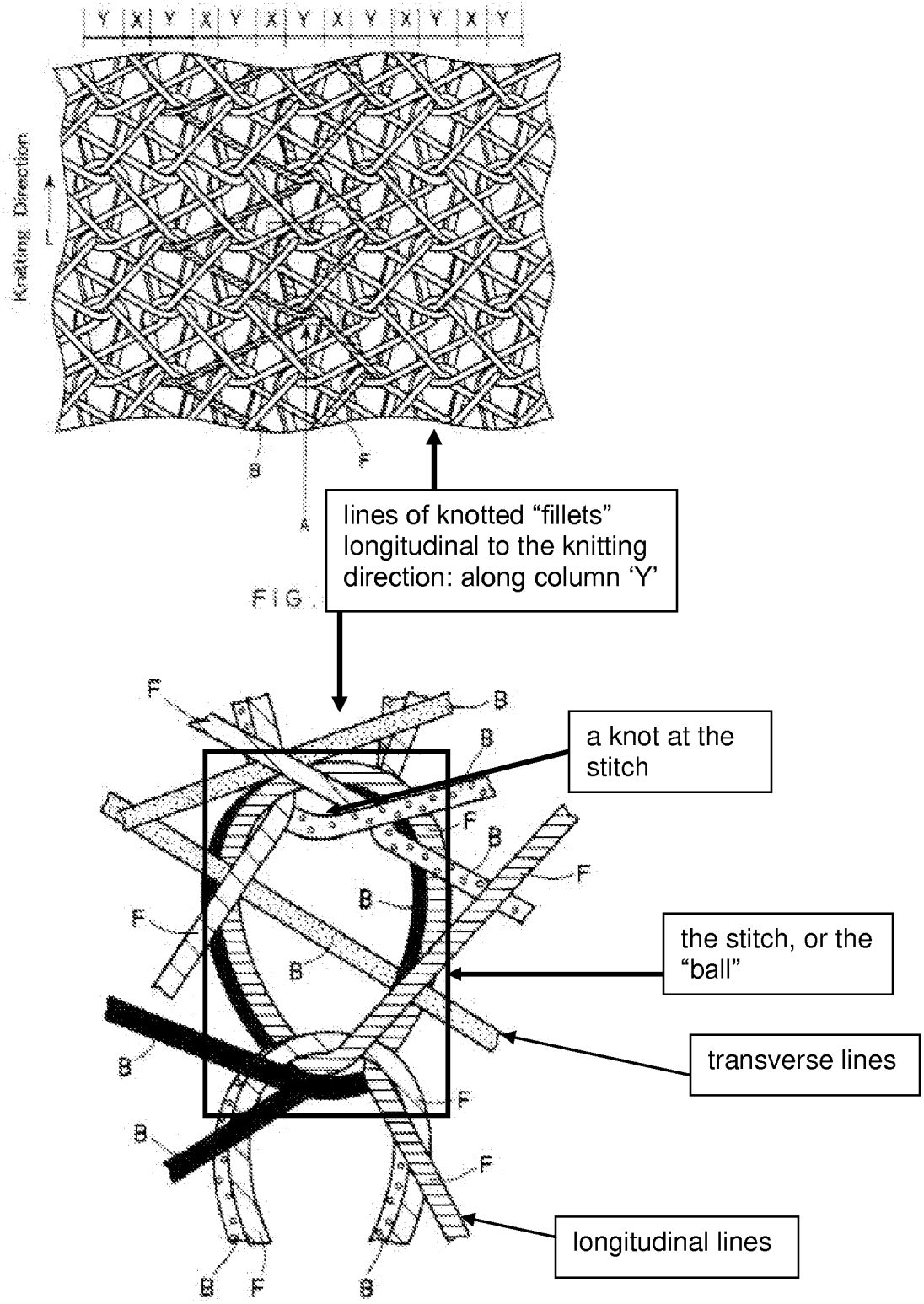
Ten Hove does not provide the details of the knitted tubes 11 and 12.

Shintani teaches a tricot knitted fabric as membrane support, which is knitted as claimed. See figure 1 of Shintani reproduced herein below.

Tricot fabric provides the knotted “fillet-like connecting lines” along the convex portion “Y” and transversely linked by threads forming transverse connections along ground stitch “X”.

Fibers B and F run longitudinal (knit direction), parallel to the longitudinal axis (Fig 3). The ground stitch is planar and fibers run transverse in the ground stitch. The knots are strung in the longitudinal direction parallel to the longitudinal axis with continuous threads in the same way as depicted in applicant's fig 1 and disclosed by the applicant.

Tricot knit is also well known and commonly used for making tubes (socks, for example).


Y X Y X Y X Y X Y X Y X Y
Knitting Direction
B
F
A
lines of knotted “fillets” longitudinal to the knitting direction: along column ‘Y’
F I G .
a knot at the stitch
the stitch, or the “ball”
transverse lines
longitudinal lines

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teaching of Shintani in the teaching of Ten Hove to provide the Tricot weave tubes for the tubes 11 and 12, because Ten Hove does not provide any particular structure for the woven or knitted tube, which would motivate one of ordinary skill to look at the prior art literature, and also because of the advantages of tricot weave as a membrane backing material, such as its ability to maintain its structure and rigidity, as well as it providing flow channels at the backing. (See Shintani abstract and “Summary of the Invention”).

Regarding the dependent claims, the tricot weave is a knit weave, produced by crocheting device, with hooked needles, the “filet lines" ‘Y’ are less permeable than the space ‘X’ between them ; material of the tricot is polyester or similar polymer; the membrane polymers are as taught.

The angle between adjacent transverse filaments is in the range as claimed (see fig 2): this range is sufficiently broad; even if not, it would be obvious to one of ordinary skill to select an appropriate weave for the tricot for the desired strength and openness.

The references in combination also teach the tubular membrane as claimed.

Regarding the material for the fabric, the references teach plastic materials such as polyester.

Claims 14,16, 26 and 28:

Regarding the material for the fabric (or thread), Ten Hove teaches that plastic is preferred, which means alternate to plastics would be less preferred, and these would include glass or metal fibers, or at least one of ordinary skill in the art would immediately envisage glass or metal as alternate to plastic for the fibers or threads for the weave. For further evidence, see Murase et al (US 2002/0046970 or Mahendran et al (US 2003/0098275). It would have been obvious to one of ordinary skill to select the material for the fibers and membranes using the teachings of Mahendran or Murase based on strength, electrical and thermal conductivity, application-specific membrane material , etc. (Mahendran, paragraphs 0006, 0021, 0029: Murase paragraphs 0032, 0047, 0051);

2. **Claims 10-14, 16-26 and 28-33 are rejected under 35 U.S.C. 102(b) as anticipated by or under 35 USC 103(a) as being unpatentable over Stockwell (US 5,359,735) with further evidence from Shintani, Murase and Mahendran.**

Stockwell teaches a method of making a coating of a breathable material (a semi-permeable membrane) over a circular knit fabric – a tube of knit fabric. The fabric is tubular also at the least because of the sleeves – arms and legs - of the garment (fig 7). The knit is described as among others, a tricot weave. See column 3, lines 64-69.

Stockwell does not describe the details of the tricot weave. However, such details are taught by Shintani as shown in rejection 1 above. Therefore, it would have been at the least obvious, if not anticipated, to one of ordinary skill in the art that the process and the product of Stockwell would be a tubular membrane as claimed.

The details of the dependent claims are also taught by the Stockwell reference, and/or by Shintani. Regarding the choice of material for the tricot fabric, Stockwell and Shintani teach polyester, nylon, lycra, or the like. However, choice of metal or glass would be only obvious equivalents unless applicant can show otherwise. Stockwell does teach conducting materials or conductive layers and coated with metal and glass for the breathable fabric (column 8; claims), as well as glass in filler layers of the fabric (column 3, lines 1-15). Murase teaches using metal or carbon as the fiber yarn in supporting membranes. Mahendran also teaches coating membranes on woven hollow tubes, where the material is polyester, etc, or glass.

Allowable Subject Matter

Claims 15 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: While the prior arts teach plastic or other material for the knitted support, the catalytically active metal for the knitted fabric is novel.

(10) Response to Argument

Appellant's arguments are addressed in the order presented in the brief:

A. Rejections Under 35 U.S.C. § 112, First Paragraph

Appellant makes the argument:

This rejection also appears to involve a misinterpretation of the claims in interpreting monofilaments or multifilaments of graphite powder and activated charcoal as being formed exclusively of those materials. However, the graphite powder and activated charcoal need only be a part of the monofilaments or multifilaments of the nature described in the above patents. The final rejection does not set forth the scope of the claims as required by M.P.E.P. 2164.04.

For example, claim 16 recites, " ... the threads are monofilament or multifilament of materials selected from the group consisting of glass fiber, graphite powder and activated charcoal", which does indicate that the material has to be only one of those three, and nothing else. It is the examiner's understanding that making filaments from *graphite powder* is extremely difficult, if not impossible. Graphite filaments are made by thermally decomposing or sintering organic resin fibers (as shown by the activated charcoal fiber in the Hirota reference above). However, applicant has not disclosed or claimed graphite fibers or graphite impregnated resin fibers, but fibers of graphite powder. This raises the issue cited in the rejection.

B. Rejections over Ten Hove and Shintani Patents and Murase and Mahendran

2. Claim 10 is NOT patentably distinguishable by the use of continuous longitudinal threads parallel to the longitudinal axis:

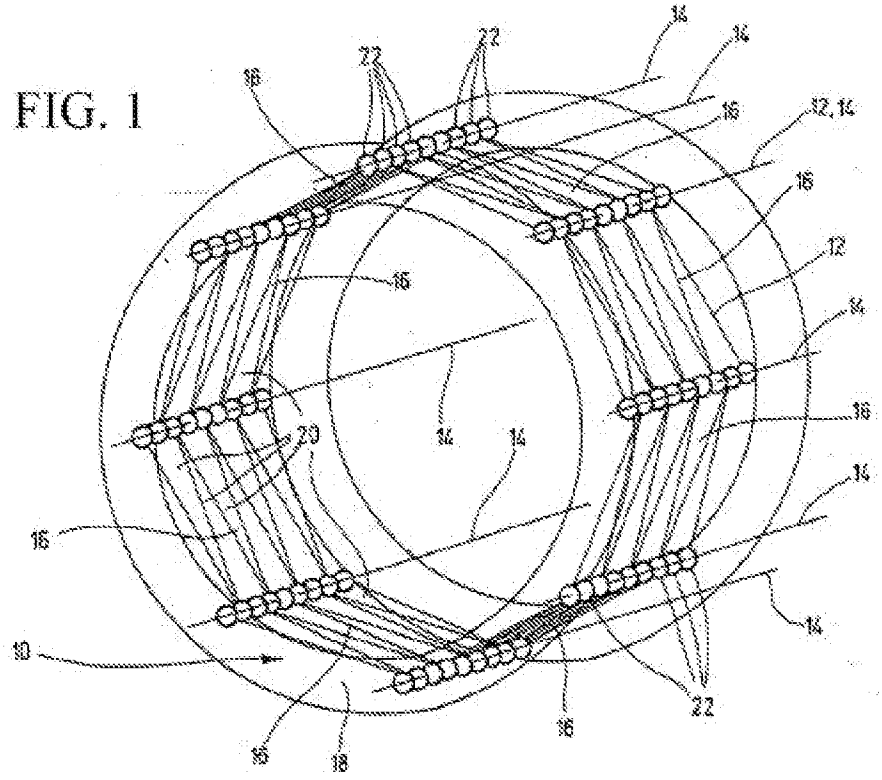
Primary reference Ten Hove teaches tubular membranes made with knitted fabric support, which appellant does not dispute. Since Ten Hove does not teach details of the knitted fabric, one of ordinary skill would have used a reference such as Shintani for such details, as well as for the advantages of the Shintani fabric as

explained in the rejection. Shintani teaches the tricot weave, which is well known and used in the membrane industry as a membrane support fabric.

In the attempt to demonstrate that the Shintani knots are not the equivalent of the claimed longitudinal threads, appellant argues that the longitudinal threads are best shown by the lines 14, not balls 22.

USPTO personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Accordingly, the claims are interpreted in the light of appellant's disclosure.

FIG. 1



Specification (original, page 6, lines 27-32) describes this figure as 'diagrammatic' and not to scale. 12 represents the threads, 16 are generally in the

transverse direction. 14 shows the general alignment of the 'linking balls' 22 in the longitudinal direction. At page 7, line 6, the disclosure reads:

> The fillet-like connecting lines 14 in this case form a kind of longitudinal thread system which, via the transverse threads 12 of the respective transverse connection 16, forms a kind of conductive knit, in particular a circular conductive knit.

At page 7, line 26, the disclosure reads: **"To**

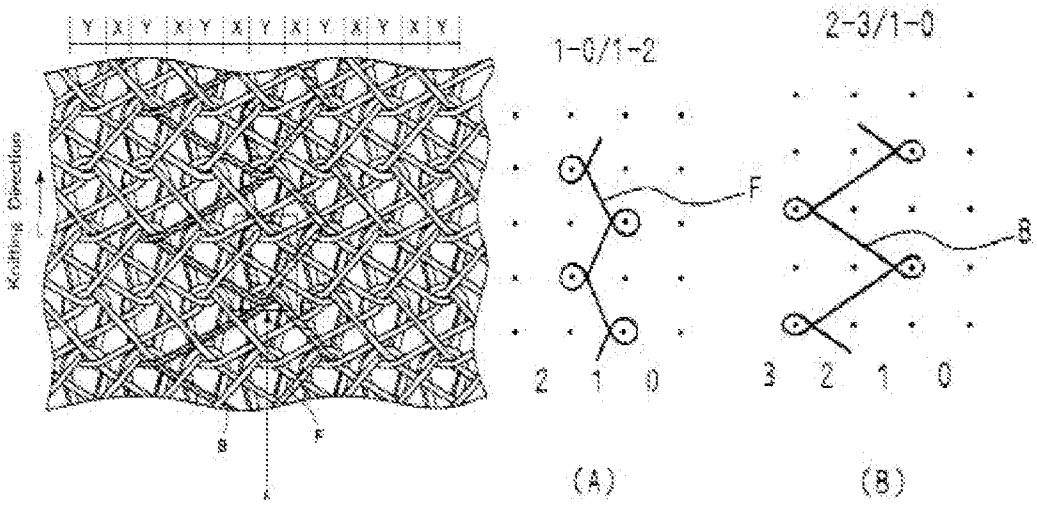
> make things clearer, the looping of the threads 12 of the transverse connections 16 with the fillet-like connecting lines 14 has been shown in the figure in the form of linking balls 22, while in reality the crocheting method means that the balls 22 in question are formed by interconnected stitches or knots, and the connecting stitches formed along the connecting lines 14 that cross over at both ends, that is to say to the right and left, to the threads 12 of the transverse connections 16, have additional longitudinal threads 12 which additionally increase the stability and the resistance to longitudinal tensioning of the tubular body 10. "

Thus, line 14 is a line of linking balls 22, which are inter-connected knots, and the connecting threads crossover from left to right. *Line 14 is not disclosed as a straight, continuous longitudinally running thread, but a line of balls 22. Line 14 is also drawn in Fig 1 as a broken line, indicating that it is the center-line of the balls 22.* This disclosure provides reason to believe that appellant's crochet knit is same as or similar to that of the teaching of Shintani. Thus, in response to the argument,

> No continuous longitudinal threads are provided in the knotted fillet lines alleged to be provided in the Shintani tricot fabric as clearly shown by the empty horizontal and vertical spaces between the knots of FIG. 1.

The line 14 in appellant's Fig 1 is not a thread, and appellant also would have similar empty spaces in the ball 22 when a knot is formed between threads 12 and 16.

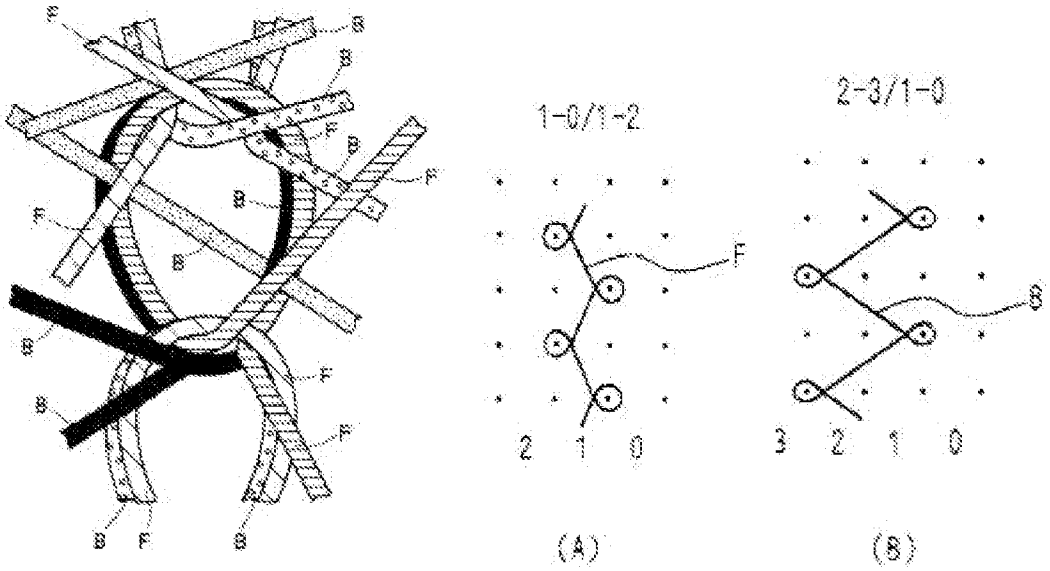
The tricot weave taught by Shintani, Figures 1, 3A and 3B:



The dots in figures 3A and B show the knots of columns “Y” in Fig 1, and detailed in Fig 2. Threads F and B show two different left to right cross-over structures between the knots, and at least the threads F run longitudinal to the knitting direction, crossing over to the left and right in the same way as appellant disclosed; and threads B run transverse, at an angle. In addition, the cross-stitched balls provide continuous threads in the straight longitudinal direction by them forming knots from stitch to stitch in the Y column, similar to appellant’s line 14. Since the columns “Y” is taught by the reference as ‘convex’ (or, raised), the knitting direction would be the longitudinal direction of the knitted tube.

Thus the threads F are “tied substantially firmly together along filet-shaped connecting lines” and also form “continuous longitudinal threads parallel to the longitudinal axis” as disclosed in support of the claim recitation.

Regarding the transverse filaments being planar, the tricot weave as taught by Shintani has a “ground stitch” and a convex portion; the ground stitch being planar and form a generally flat base for the membrane backing, whereas the convex portion forming longitudinal ridges over the ground stitch (or the base) to provide flow channels. See column 3, lines 9-14 of Shintani. This is further evidence that the transverse threads are planar.



In Fig 2 of Shintani, which shows the details of one loop of Fig 1, it is seen that the loops are formed by F and B threads, and several other B threads cross through the loop transversely. Thus each of these crossing B threads transversely connect one loop to the adjacent loops to its left and right. The loops are also knotted to adjacent top and bottom loops by the F and B threads. In addition the F thread in the complete loop shown in the figure knots the adjacent top right/left and bottom right/left loops as well, thus running longitudinally.

Regarding the argument about longitudinal tensile stretches arising from filtration, since the knit taught by Shintani is same as, or at least similar to that of the appellant, such strength would be inherently present in the Shintani knit. However, this argument is not commensurate in scope with the claims, because there are no such limitations recited in the claims. In addition, Shinatni teaches additional measures taken to improve the rigidity of the fabric, which is clearly stated in the abstract and other places in Shintani. On the other hand, appellant has not shown any evidence to overcome the prima facie case of obviousness.

Claims depending from Clam 10. Appellant does not provide any specific arguments or secondary evidence to overcome the prima facie case.

Claim 11: the weave taught by Shinatni is a knitted weave; and tricot weave is formed by crocheting needles (hooked needle) because it has knots - see column 3, lines 9-14 of Shintani. Forming stitches with the sinker loop and the needle loop require a hooked needle. Appellant has not provided any evidence that that is not the case.

Claim 12: passages with high flow rates: see the ground stitch portion having high permeability. Column 5, lines 9-13. Moreover, naturally, the knots at the loops (Fig 2 of Shintani) have more thread density, which would inherently be more resistant to fluid flow than the open "ground" regions 'X'.

Claim 13-16: the materials recited are all shown by the cited reverences; especially glass fiber is taught by Mahendran.

Claims 17 and 18: the transverse connections threads run at different angles in Shinatni. Regarding the specific 30 degree angle, applicant has not shown any criticality. In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Claims 19 and 20: the tricot weave in the Shintani reference would have multiple lines and connections, a line being the column Y and a surface being the column X in Shintani fig 1. The actual number of these lines and surfaces would depend on the diameter of the tube, how tight the knits are and the denier of the fibers.

Claims 21 and 22: the references do teach the microporous membranes formed by the cited materials.

In general, the dependent claims include almost all possible materials for the membrane and the fibers for the fabric, and provides no criticality for any of them. Appellant also discloses at several places in the specification that these materials are known, including metal and carbon fibers for the fabric, and the membrane materials. What is disclosed as novel is the crochet knit, which is shown with evidence as known and used in the membrane art.

4. Claim 23 is Patentably Distinguishable By Continuous Longitudinal Threads Parallel to the Longitudinal Axis

Claims 23-26 and 28-33: These are product claims. However the arguments presented are the same as that of the process claims above; and the examiner's response also is the same as above. Therefore, they are no being repeated.

C. Rejections Over Stockwell and Shintani Patents and Murase and Mahendran

2. Claim 10 is Patentably Distinguishable By Continuous Longitudinal Threads Parallel to the Longitudinal Axis

Stockwell teaches tubular membrane fabric (wearable), which appellant does not dispute. The arguments are directed at the type of weave in the knitted fabric, which was shown in the office action as the same as, or similar to what is claimed, with details of the tricot weave being obtained from the Shintani reference. Tricot weave is well known and is commonly used in the garment industry. The specific details shown in the single tricot weave (figures 1-3 of Shintani) is very similar to what is disclosed by the appellant, or what can be gleaned from appellant's disclosure. Thus the claims are anticipated, or at least made obvious by Stockwell, with evidence from Shintani. Details of the arguments presented in the section are the same as that presented in rejection 1, and therefore, the response is the same, and is therefore not repeated.

Regarding the argument (which is also a repeat from section B above):

, No disclosure in the Stockwell or Shintani patent (particularly the Shintani knots) provides the method steps of forming this structure of the claims, and no analysis is provided to support the implicitly provided allegation of the February 7, 2011 Advisory Action.

The method steps of forming the weave as well as the structure of the weave have been clearly shown above in section B. Contrary to the argument, in an attempt to find any allowable subject matter, the examiner had made a request in the advisory action for any specific details of appellant's weave that would be different from that of the tricot weave, which appellant failed to submit. The detailed disclosure of appellant's weave looks very similar to the tricot weave taught by Shintani, if not exactly alike, as shown.

Claims depending from claim 10: Appellant does not provide any specific argument for patentability over the teaching of the references.

Claim 11: Crochet steps are implied in the knitting of the tricot weave, and provided by Shintani.

Claim 12: the "X" regions are more permeable than the Y regions – as shown before.

Claims 13, 14 and 16: Stockwell does teach the materials for the thread as claimed, which is shown in the rejection. It may also be noted that in traversing the 112 rejection, appellant makes the argument that graphite powder and activated charcoal may only be part of the material of the threads and that the graphite powder or the activated charcoal can be carried by or impregnated in other fibers. Stockwell teaches metal such as nickel and materials such as glass among other things forming part of the fabric, which would read on these claims.

Claims 17 and 18: the angle is only a mere change in a dimension, and is not patentable as shown before.

Claims 19 and 20: number of surfaces or transverse connections would depend on the size of the stitch and the diameter of the fabric tube in Stockwell, which can be many for the sleeves of a garment, and is not a patentable limitation, as shown before.

Claims 21 and 22: the membrane taught by Stockwell and Shintani is microporous, and the materials recited are also taught. Appellant does not provide any evidence to the contrary.

In addition, appellant has claimed pretty much all possible fibers for the fabric – polymeric, metal, carbon, graphite, glass, etc; and many possible membrane materials. Appellant provides no criticality for the selection of materials. Appellant also discloses that all these are known in the art.

4. Claim 23 is Patentably Distinguishable By Continuous Longitudinal Threads Parallel to the Longitudinal Axis

The arguments provided traversing the rejection of claim 23 is also the same as above, and therefore, the response is not repeated.

Arguments traversing the rejection of claims depending from claim 23:

Again, the arguments are repetitions, and no specific arguments are provided for the dependent claims, other than stating that they are “distinguishable”. Responses are provided above, and are not being repeated.

The arguments starting at page 21 of the brief, under "**o - O - o**":

In response to the argument that *if no particular finding can be made as to the reason one skilled in the art would have used the features of the Shintani fabric in the Ten Hove or Stockwell device to produce the claimed invention*: It has been very clearly shown that Ten Hove teaches using knitted fabric, and Stockwell teaches tricot fabric, which has the same knit as disclosed and claimed by the appellant. Since both of the references show no details of the knitted fabric or the tricot (and other knitted fabric in Stockwell), it would have been obvious to one of ordinary skill to look for such details in the literature, and thus one would have found and used Shintani for the details.

Regarding the argument about hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

D. Rejection Over Stockwell Patent Alone

Process claim 10 recites constructing a tubular body having a longitudinal axis and then applying a predefinable membrane material to the tubular body. Claim 10 also recites some details of the weave of the tubular body.

Stockwell teaches constructing a tubular body (garment) and then applying a membrane material on to it. Regarding the details of the fabric, Stockwell teaches tricot,

and by specifying tricot, the details of the knit weave are also presented. For one of ordinary skill in the membrane art who may be less familiar to the woven or knitted fabric, such details of the tricot knit can be obtained from a teaching reference such as Shintani. Thus Stockwell anticipates claim 10. Since claim 23 is the product claim, it is also anticipated.

Alternately, since Stockwell does not teach the details of the weave (tricot or others), it would have been obvious to one of ordinary skill to obtain such details form a teaching reference such as Shintani, and one would have also done so to have the advantages taught by Shintani.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Krishnan S Menon/
Primary Examiner, Art Unit 1777

Conferees:

/SHRIVE BECK/
Supervisory Patent Examiner, Art Unit 1700

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Supervisory Patent Examiner, Art Unit 1777